

## GENERAL INSTRUCTIONS

### WET BULB-GLOBE TEMPERATURE KIT

NSN 6665-00-159-2218

A. The wet bulb-globe temperature kit is an instrument for providing information on hot weather risks to the health of troops undergoing training. The information is displayed on a scale in the form of an index, computed from the weighed readings obtained from three different thermometers.

1. A stationary wet bulb (WB) thermometer exposed to the sun and prevailing wind.

2. A similarly exposed "black globe" (BG) thermometer with a black sheath over the bulb. The sheath and bulb are inside a transparent perforated plastic shield.

3. A dry bulb (DB) thermometer with its bulb shielded from the direct rays of the sun by a shield painted white.

B. The wet bulb-globe temperature index (WBGT Index) is equal to 70% of the wet bulb (WB) temperature reading plus 20% of the black globe (BG) temperature reading plus 10% of the dry bulb (DB) temperature reading and can be computed as follows:

$$\text{WBGT Index} = 0.7 \text{ WB} + 0.2 \text{ BG} + 0.1 \text{ DB}$$

Use of the attached slide rule provides the correct WBGT Index automatically.

C. To use the WBGT Index as a control of physical activity, the following guidelines from TB-MED-175 are provided.

1. When the WBGT Index reaches 82, discretion should be used in planning exercise for unseasoned personnel.

2. When the WBGT Index reaches 85, strenuous exercises such as marching at standard cadence should be suspended for unseasoned personnel during their first three weeks of training. At this WBGT Index, training activities may be continued on a reduced scale after the second week of training.

3. Outdoor classes in the sun should be avoided when the WBGT Index exceeds 85.

4. When the WBGT Index reaches 88, strenuous exercise should be curtailed for all recruits and other trainees with less than 12 weeks training in hot weather. Hardened personnel after having been acclimatized each season, can carry on limited activity at WBGT indices of 88 to 90 for periods not exceeding six hours a day.



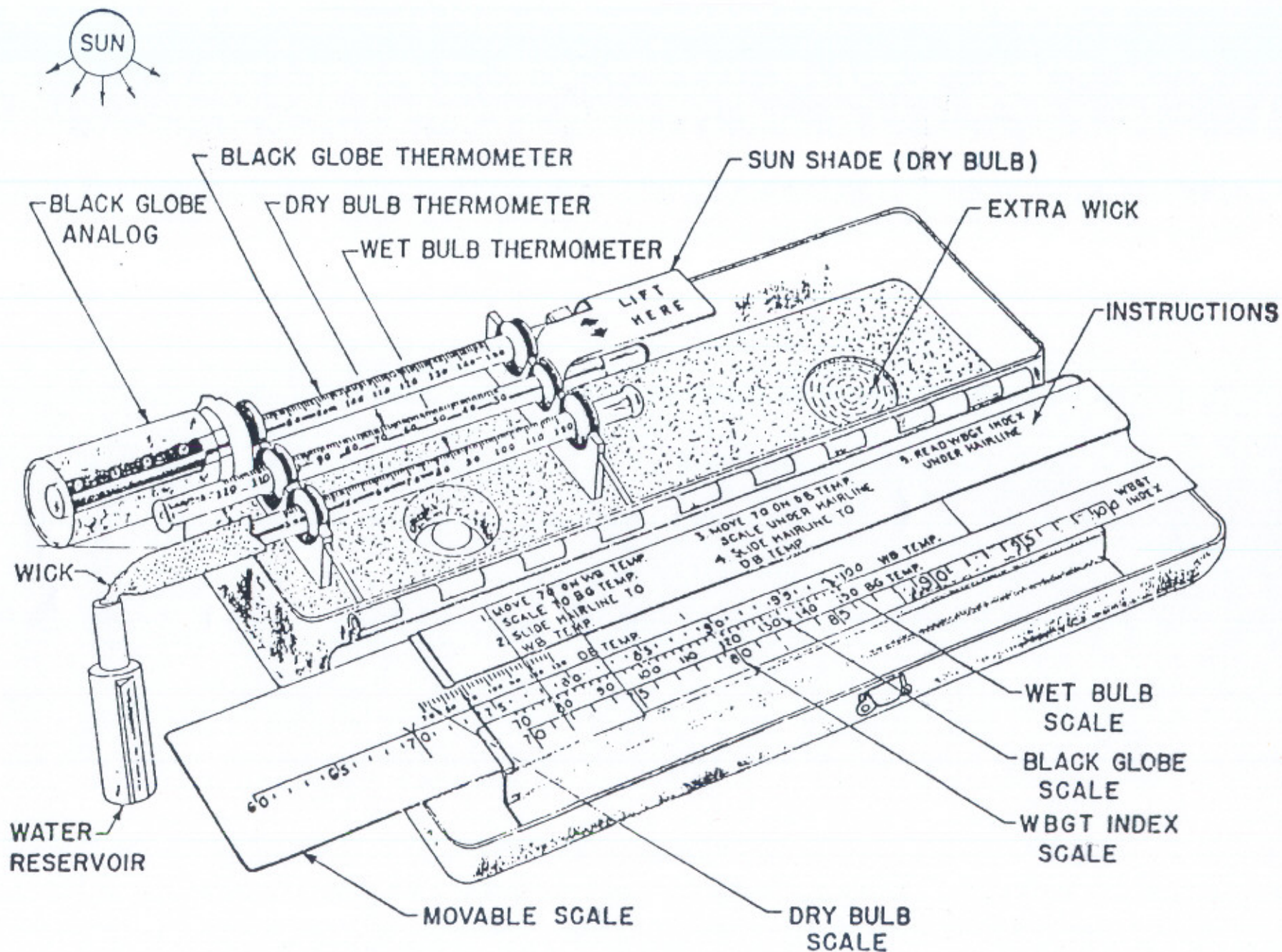


FIGURE 1. Wet Bulb-Globe Temperature Kit



D. The WBGT Kit is enclosed in an aluminum case. The case is kept closed with a miniature stainless steel catch. The threaded hole in the bottom of the case is used to attach the case to a standard lightweight photographers tripod that is not supplied with this kit.

1. The kit is opened by disengaging the catch and lifting the cover.
2. Lift the thermometer assembly up and out (See Figure 1).

NOTE: Examine the column of each thermometer. If the liquid has separated, heat the bulb slowly and carefully until the liquid reunites. CAUTION: Never use a match or any kind of open flame to heat a thermometer bulb. Use a warm liquid only.

3. Wet the wet bulb wick thoroughly. NOTE: The wick is cotton and is 5-inches long with a knot 1-inch from one end. The end nearer the knot is pushed into the reservoir and the other end is slipped on the thermometer bulb (See Figure 1). The water reservoir should be filled with clear, preferably deionized or distilled water and utilized as indicated. The water should be changed daily and the wick washed with soap and rinsed thoroughly. To avoid error in the measurement of the wet bulb temperature, the water in the reservoir must be free of salt and soap.

4. Hold the kit with the thermometers toward the sun, with the "black globe" thermometer closest to the sun. Wait 10 minutes for stabilization of temperatures.

5. Review the instructions on the right side of the slide rule (WET BULB-GLOBE TEMPERATURE INDEX CALCULATOR). Assume for purposes of instruction that the Black Globe (BG) temperature reading is 120, the Wet Bulb (WB) temperature reading is 80, and the Dry Bulb (DB) temperature is 100.

a. Move 80 on the Wet Bulb Temperature (WB TEMP) scale so that it is directly under 100 on the Dry Bulb Temperature (DB TEMP) scale.

b. Find 120 on the Black Globe Temperature (BG TEMP) scale.

c. Read Wet Bulb Globe Temperature Index (WBGT INDEX) at the Black Globe Temperature (BG TEMP).

d. If you have performed the slide rule movement correctly, the Index should read 90.

E. CAUTION. After use, empty the water reservoir to prevent wetting or rusting of parts in the kit.

F. The kit contains, in addition to the parts shown in Figure 1, the following spare components:

- 1 each transparent perforated plastic shield
- 1 each water reservoir
- 18 inch extra wick